



# The Alway Years

1957-1964

*Stanford University School of Medicine*



*Robert H. Alway, M.D.*

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## *1. Introduction*

Robert H. Alway agreed to serve as acting dean in 1957 at a time of great stress; a year later he was persuaded to assume the deanship and guide the redevelopment of the medical school on the Stanford campus. His leadership has been marked by courage, integrity, and devotion to principle. Appointments to the faculty were dictated solely by "the best man for the job." Himself a clinician without extensive research experience, he held that research is the lifeline of medicine and vigorously supported its development in the curriculum and at the laboratory bench and bedside. Yet there was no decrease in emphasis on heeding the faint cry of the patient as an individual or as a member of the community. Integrity, scholarship, compassion were in the forefront of his administration.

Dean Alway's resignation to return to full-time teaching in the Department of Pediatrics coincides with the completion of the first and major phase of development of the Stanford University Medical Center. A new physical plant has been constructed, a geographical move accomplished, key faculty appointments made, clinical and research programs developed, and a new curriculum launched. This is an appropriate time for self-evaluation. This document, prepared by members of the faculty, is intended as a tribute to Dean Alway for his effective role in guiding the school through these early and decisive years; as such it is also a progress report on the present state of the Stanford University School of Medicine.

Stanford University School of Medicine has a distinctive mission in medical education and research as an institution fully integrated with a vigorous university, dedicated to development of leadership, innovation, and scholarly excellence. In the medical school, the central concern is to bring about professional excellence in patient care. The scope of our responsibility transcends didactic transmission of the best existing methods. We recognize the need for diverse interests and talents working along many fronts: from research in basic sciences relevant to medicine, to postgraduate courses in practice specialties. The compactness and intellectual cohesiveness of the school promotes interaction among these diverse elements difficult to achieve in other contexts.

The new curriculum encourages participation of medical students in university life by the reservation of explicit periods of free time in a five-year program. This curriculum is unique among medical schools. It reflects our determination to find educational modes adequate to meet the complexities of modern medicine. Stanford emphasizes preparation for a *diversity* of career patterns, including practice, teaching, research, and public service. We attempt to prepare the student for possible participation in the wide range of responsibilities and opportunities now confronting clinical medicine and the medical sciences.

Since the Second World War, this country has undertaken new aims and responsibilities in medicine through the intensive support of health research. The several billions of dollars so far spent are only an initial investment, but have already created new promises and opportunities that modern medical education must incorporate. The crucial fact is that medical knowledge doubles at least every dozen years—as much will have been added to the repertory (to which the

student must have responsible access) between the time the student enters college and establishes his practice as his forebears had accumulated throughout history until that time! In some fields, revolutionary innovations have arisen from one year to the next.

This bewildering milieu calls as never before for a firm grasp of educational goals. Abstract teaching without factual content condemns itself, but facts alone will soon be obsolete. The educational program must sharpen the student's capacity for critical judgment and be the foundation of a lifelong struggle (as indeed it is) to remain current with the ever-changing reality of the present scientific and technological scene. The educational opportunities of the successful, busy physician are diminished by his indispensability to the community; hence it is especially important that the student build at this time his fundamental scientific and clinical acumen and a realistic confidence in his ability to keep it current. It is surely unreasonable for a physician to assert that he "cannot understand this scientific stuff" and then undertake the most awesome responsibilities given to any profession.

Implicit in this viewpoint is a high degree of respect for individuality in students and faculty. There is no expectation that everyone will be doing essentially the same thing. Rather, there is serious concern for the interests and aptitudes of the individual. Beyond the core curriculum which is essential for all medical students, there are multiple pathways through the medical school—building the strengths of each student and recognizing the many important tasks of medicine. In this respect for individuality, Stanford may go beyond any existing medical school. This feature of the new curriculum has proved highly attractive to many gifted stu-

dents, and has helped to give the school strong national drawing power in relation to the limited pool of high-quality students.

Under the deanship of Robert Alway, the School of Medicine embarked upon this new course.

## *2. Accomplishments and Current Developments*

The surge of development of medical science in the last two decades in this country is associated with the growing importance and complexity of the medical school and especially its role as part of the university. The medical school is an instrument of many concurrent responsibilities: education of its students, research, the care of patients committed to and sought by the teaching hospital, leadership in community understanding of the social importance of medical advance.

The educational responsibilities involve many kinds of students: (1) candidates for the M.D. degree to qualify for medical practice; (2) post-M.D. students—i.e., interns, residents, post-residency fellows; (3) physicians in postgraduate training in the sciences related to medicine; (4) candidates for the Ph.D. degree to qualify for research and teaching; (5) postdoctoral research fellows.

In teaching medical students the scientific basis for the practice of medicine, there are key features in the curriculum and philosophy that must depart sharply from previous practices. The unity of medical science and its curricular integration are emphasized in the Stanford Plan. In terms of content, the impossibility of teaching everything necessitates the judicious selection of “core” elements which include central concepts, basic language, and the most effective examples of the factual fabric of a subject. Ample free time for contemplative assimilation, choice of electives, pursuit of re-

search, and further studies in humanities and sciences dictate a five-year program as in the Stanford Plan.

In research, medical schools carry the primary responsibility for advancing the medicine of tomorrow through a variety of clinical and basic-science investigations in every field that can contribute to the understanding of living organisms. Excellence for a school of medicine thus implies a profound commitment to the base of the biological sciences, with significant linkages with behavioral and physical sciences as well.

Patient care administered by a modern medical school must be conducted at an exemplary level to discharge its responsibilities to its patients and the medical community, and to meet the teaching and research needs of the school. Modern medicine requires an unprecedented diversity of faculty skills and facilities for patient care.

Stanford University has been approaching its maturity as a great university of world rather than regional stature. The medical school makes a significant contribution to this reputation, as a world-renowned center of research, for its pioneering in university-medical education, and in the integration of high-quality medical care with teaching. As in other aspects of the university's growth, Stanford Medical School's impact can only be understood in national perspective, which may differ from the legitimate but more confined values of previous eras.

#### *A. Preclinical Sciences*

The scientific foundations of medicine are in chemistry, physics, mathematics, and biology. They support medicine through the preclinical sciences: anatomy, biochemistry, genetics, physiology, pharmacology, microbiology, and pathol-

ogy. What has Stanford accomplished under the leadership of Dean Alway in the preclinical sciences since 1959 and what are the current developments?

### *Accomplishments*

1. It has developed teaching programs that coordinate related areas and in most cases provide a fresh and successful approach. For example,

a) A course in "Cell Structure and Function" initiates the freshman student on the very first day into the dynamic experimental basis of medicine.

b) The laboratory course in biochemistry discards the syllabus and standardized routines and asks the student to design his protocols, use advanced equipment, and evaluate data. Students voluntarily spend evenings, weekends and free time to satisfy their curiosity and pride in a good experiment.

c) An integrated course in the neurosciences provides a unique approach to the biological basis of human behavior through the collaborative effort of preclinical and clinical teachers—anatomist, physiologist, pharmacologist, neurologist, psychiatrist, and biologist. This course is achieving a unified presentation of material that is of the utmost importance to the future physician.

d) A combined laboratory and library experience in pharmacology focuses upon the problem of drug evaluation—one of the major challenges faced daily by every practitioner of medicine. Students study new drugs in comparison with established ones, and are required to assess critically the promotional literature distributed by pharmaceutical firms to physicians.

2. It has designed and maintained the Max C. Fleisch-

mann Laboratories for conjoint laboratory teaching of the basic medical sciences. These highly successful laboratories have been copied throughout the world. These laboratories are efficient, economical, and inspiring. They encourage integrated teaching whenever it is feasible. Students have a dignity and an opportunity to mature in this environment. Their enthusiasm and accomplishments indicate that a major fraction have grasped the opportunities.

3. Stanford students have excelled in national competition. Their performance on the last National Board of Medical Examiners tests is outstanding. They rated number one in every one of the six preclinical sciences tested. In overall performance their average of 88.2% (46.8% honors and 0.0% failure) was at least 2% higher than any of the other schools. This is all the more remarkable in that our teaching is not directed toward passing examinations. This performance attests to the quality of our students, who are attracted by our curriculum, and can meet these external standards while pursuing other goals.

4. Stanford students enter the clinical years with a grasp of fundamentals that impresses and challenges their clinical teachers. The course in Introduction to Clinical Medicine is taught conjointly in the first three years by all clinical departments. From this and their preclinical science courses, the students, to a greater extent than before, have an attitude of scientific humility, an awareness of the necessity for continuing education and a versatility for engaging in many of the varied facets of medicine. There is an emphasis on understanding disease processes in pathophysiologic terms as well as on gaining some appreciation of the physical and emotional consequences of the disease upon the individual and his family.

5. Stanford has developed large and varied teaching programs for pre- and postdoctoral students outside the regular medical curriculum. Predoctoral candidates for the Ph.D. in these sciences number 46. Postdoctoral training programs, including M.D. and Ph.D. graduates, are supported by training grants in each of the departments with an annual census of over 30 trainees. These students represent our future teachers in both clinical and preclinical sciences and research workers in all branches of medical as well as fundamental sciences. Our medical students, some fraction of whom may adopt academic careers, also benefit from this milieu, whether their objective is practice or academic medicine.

6. Previously regarded as lacking emphasis in preclinical sciences, Stanford now enjoys wide national recognition for developing eminence. The volume of research and the quality of this research have placed Stanford among the leading institutions in the world. Stanford is a major world center in research and training in the chemical basis of heredity and cell differentiation. The Biochemistry Department is pre-eminent in the chemistry and biosynthesis of the nucleic acids and the proteins. In close relationship with the research and seminars of the Genetics, Biology, and Chemistry Departments and the Biophysics Laboratory, an unmatched opportunity is provided the student, the investigator, and the clinician for keeping abreast of the revolutionary developments in science and medicine.

7. Stanford is in the vanguard of medical schools in establishing a Department of Genetics. This department also provides unique leadership in space biology and its instrumentation, and in computer technology that will inevitably transform medical science.

8. It has developed an unusually effective integration be-

tween the fundamental sciences in the School of Humanities and Sciences and the departments in the preclinical sciences. There is, for example, close collaboration in joint teaching programs between Biochemistry and the Biology and Chemistry Departments, between Genetics and the Biology and Mathematics Departments. The importance of this development deserves emphasis. It was, to begin with, a major objective in moving the medical school from San Francisco to the campus. It is now possible for all students in the medical school and its allied programs to enjoy the curricular and seminar offerings of the basic science departments throughout the university. At the same time, the knowledge, technical advances, and curricula of the medical sciences are pertinent and available to chemistry, physics, biology, and statistics, as well as to psychology, sociology, and anthropology. We have done well, but we can do better in the realization of these possibilities for unusual scholarship.

### *Current Developments*

*Development of existing departments.* Anatomy has been without an executive head for two years. The time is right for a major change. Anatomy is at the beginning of a splendid new era. The electron microscope and modern histochemistry give it the opportunity to correlate structure and function at the cellular and subcellular level. Stanford received the Pfeiffer-Merner Professorship in Medical Science with the expectation that it would be used for Anatomy.

The Physiology Department has also been without an executive head for a year. Its quarters are old and inadequate. Physiology had been a dominant preclinical discipline in the past 100 years. Now, studies of the physiology of respiration, circulation, and special senses have been taken over

by the surgeon, the internist, and the neurologist. There is a yawning and frightening gap developing between the classical domain of the physiologist and the preoccupation of the biochemist with molecular events. We desperately need a new breed of physiologists with chemical and physical training and insights to tackle such problems as memory, differentiation, and aging, and restore physiology to its central place in the curriculum. The Department of Physiology needs modern facilities to attract an outstanding man to this job and to retain the talented people it now has.

The resignation of the executive head of the Pathology Department to join the Department of Dermatology creates a new responsibility re-evaluating the role of pathology and its development in this medical school. Traditionally the bridge between preclinical science and clinical medicine, pathology must emerge as a quantitative, experimental science without neglecting its great heritage in the recognition of lesions of disease and their pathogenesis.

The Microbiology Department, like the Anatomy and Physiology Departments, suffers from physical dislodgment from the main medical center and the current of its affairs. The filling of these needs is simply the completion of the original building plans.

### *Development of More Effective Ties with Other Schools in the University*

As departments in the medical school develop, the need for closer integration with the teaching and research activities of related departments in other schools becomes more compelling. Based on existing good will, physical proximity and sympathetic administrative support, such cooperation should flourish on the Stanford campus in an unprecedented way.

Loci of such activity which already provide very favorable collaborative efforts are:

1. Behavioral sciences—psychiatry, pharmacology, neurology, physiology, neurosurgery and neuroanatomy with biology, psychology, anthropology, and sociology and the Behavioral Science Center.
2. Molecular biology—biochemistry and genetics with biology and chemistry.
3. Neurological sciences—many medical school departments and biology.
4. Applied mathematics—all medical school departments with statistics and the computer center.
5. Radiologic physics and radiobiology—radiology with physics, applied physics, chemistry, biology, and the biophysics laboratory.
6. Systems analysis—physiology with engineering.

#### B. *Clinical Medicine*

The move of the Medical School from San Francisco to the University campus in the summer of 1959 represented a cataclysm for the clinical departments. It completely disrupted long-established sources of patients for inpatient and outpatient teaching, and in certain of the clinical specialties and subspecialties it decimated the ranks of the full-time faculty.

For the clinical departments, therefore, the years immediately following the move necessitated a struggle for survival, in which new sources of teaching patients, no longer drawn from indigent or semi-indigent populations, had to be developed; working contacts with a host of new community agencies and resources had to be established; new full-time faculty for the clinical departments had to be recruited,

often in subspecialties in which men of high caliber, devoted to teaching and research, are in desperately short supply; and efforts had to be made to cope with, and in part to resolve, major administrative complexities and difficulties inherent in the conjoint university-community hospital center organization. If the clinical departments had, during these past five years, accomplished nothing more than to provide solutions for these extremely urgent practical problems, they would have accomplished a great deal. In fact, as the record detailed below indicates, they have achieved these goals and far more.

### *Numbers of Teaching Patients*

Historically, medical students have been trained on indigent patients, and this was formerly true at Stanford Medical School in San Francisco. The rise of insurance coverage for medical care has greatly diminished the numbers of indigent patients and has necessitated a shift to the utilization of private patients for the teaching of medicine. The necessity for this drastic change in the character of the clinical teaching program, together with the disruption entailed in the move from San Francisco, formed the basis of many dire predictions of a severe shortage of teaching patients, which have now been proven to be unfounded.

In 1957 Dean Alway initiated a series of conversations with the Palo Alto medical community to orient them to the needs of the Medical School. During the past five years the clinical departments have developed working contacts with a host of new community agencies, including the San Mateo Community Hospital, Santa Clara Hospital, Stanford Children's Convalescent Hospital, Children's Health Council, and the Palo Alto Veterans Hospital. The Depart-

ments of Psychiatry and Pediatrics of both the Stanford and Palo Alto medical staffs soon developed unified services which utilized all patients for teaching. Over the years the Departments of Anesthesia, Surgery, and Obstetrics and Gynecology have developed similar associations.

The establishment of the Outpatient Department demanded a new approach. Dean Alway obtained support from the Commonwealth Fund to enable the development of a unified outpatient facility headed by a Director of Ambulatory Services. As is indicated in TABLE 4 and FIG. 1, the Outpatient Department has grown steadily during the past five years.

The supply of patients for medical student teaching purposes is abundant and diversified, at both the outpatient and inpatient levels, as is indicated in the tabulated data appended to this report. There are now no unmet needs for any aspect of undergraduate clinical teaching, although certain postgraduate residency training programs require a further increment of the inpatient case load. Teaching patients are now drawn from many sources: from the local community and certain special groups therein; from northern California and Nevada, largely by physician referral; and to certain departments, patients are referred from all parts of the United States and from many foreign countries.

### *Faculty Recruitment*

Dean Alway initiated and has strongly supported an intensive nation-wide recruiting campaign, with the result that the full-time faculty of the clinical departments has been greatly strengthened. New Departments of Anesthesia and Dermatology have been created, and outstanding individuals have been brought to Stanford to head the Depart-

ments of Medicine, Pediatrics, Psychiatry, and Surgery and a number of the subspecialty divisions, notably Urological Surgery, Cardiovascular Surgery, Neurosurgery, Rehabilitation Medicine, and Neurology. Many well-trained and experienced practicing physicians in the community have been appointed to the voluntary faculty of the clinical departments, replacing those in San Francisco who were unable to continue their teaching contacts after the School moved. The growth of the faculty is revealed in the data of Table 2.

### *The Undergraduate Curriculum in the Clinical Years*

The first class in the new curriculum entered the clerkship experience of Year IV only two years ago; thus, there has been appreciably less time for an evaluation of the clinical teaching program than in the preclinical years. Moreover, the practical problems of patient and faculty recruitment have taken precedence over curriculum development at the clinical level. Nonetheless, strong clerkships have been established on all services at both the Palo Alto-Stanford and the Veterans Administration Hospitals. Elective interdisciplinary clerkships in a number of areas of outstanding faculty strength, such as the neurological sciences program, clinical oncology and radiotherapy, respiratory disease, and cardiovascular disease, have been developed as a logical extension to the clinical years of many of the basic principles embodied in the preclinical curriculum.

The challenge of adapting the teaching of clinical medicine to private patients is being successfully met; this achievement *per se* is a major contribution to medical education. The student-physician is carefully supervised in his history-taking, physical examinations, and other contacts

with each patient. Every aspect of patient care is characterized by the application of meticulously high standards. The student is encouraged to utilize consultative assistance and laboratory examinations freely but critically. The personal as well as the purely medical needs of the patient are stressed.

Significant successes have been achieved in the important goal of bridging the gap between the preclinical sciences and the teaching of the clinical years, and great stress has been placed on the application of fundamental concepts of physiology, pathology, biochemistry, and pharmacology at the level of the patient. Although no index of the success of teaching in the clinical years comparable to the National Board Part I examination results is yet available, it may be noted that the first graduating class in the new curriculum did unusually well, relative to prior Stanford experience, in national internship competition.

*Internships, Residencies,  
and Fellowship Training Programs*

This academic year will see over 300 undergraduate students enrolled in the medical school and an equal number of house officers and fellows in training in the clinical departments. The residency training programs of several departments also make available teaching patients from the Veterans Administration Hospital, the Santa Clara County Hospital, and the San Mateo Community Hospital. Special fellowships and grants have been awarded to a number of the clinical departments to develop integrated clinical and research training programs at the graduate level.

## *Patient Care*

A major goal has been the establishment of the highest quality of patient care in all of the clinical departments. That this goal has at least in part been realized can now be documented on the basis of certain objective indices. Particularly noteworthy have been the achievements in those patient care areas which, by their very nature, require close collaboration and teamwork by members of several clinical departments.

1. The cardiovascular disease group is composed of representatives from the Departments of Pediatrics, Medicine, Radiology, and Surgery. The outstanding achievements of this group in the open-heart surgery program reflect not only the superlative technical prowess of the surgical members of the team, but the many refinements in diagnostic technique, particularly in angiocardiography and cardiac catheterization, which have minimized diagnostic error and enabled more judicious and critical selection of suitable cases for surgical intervention. It is therefore not surprising that a recent tabulation of the results of the open-heart surgical program at Stanford during the five years since the move reveals the lowest operative mortality of any open-heart surgery program in the entire nation.

2. The optimal treatment of cancer patients also requires an interdisciplinary approach, and here again the close teamwork of representatives from Surgery, Radiotherapy, Medicine, and other departments has yielded significant advances in end results. The Division of Radiotherapy, which pioneered in the adaptation of the linear electron accelerator for medical purposes, has now had several years of experience in the use of the 6 million electron volt X-ray beam of

this machine in cancer therapy. The physical characteristics of this high-energy beam have very real clinical advantages, which have made possible unsurpassed long-term results in the treatment of locally inoperable carcinoma of the prostate, Hodgkin's disease, and carcinoma of the ovary, the cervix, the urinary bladder, and the oral cavity and laryngopharynx. Certain types of cancer which have not responded optimally to either surgery or radiotherapy alone are now being successfully treated by a combined surgical and radiotherapeutic attack; similarly, certain types of cancer which are too advanced for successful treatment by radiotherapy alone are now being controlled by combined chemotherapy and radiotherapy.

3. *Care of Children with Chronic Disease.* Since many of the acute illnesses of children have disappeared, the Departments of Pediatrics, Psychiatry, and Physical Medicine have had a particular interest in the comprehensive care of children with long-term debilitating diseases. Dean Alway, who had served as Medical Director of the Stanford Convalescent Home (now Hospital) for some years, was instrumental in amalgamating a cooperative program in this field. During the years the affiliation with the Stanford Convalescent Home has matured; this facility is now an integral part of the undergraduate and graduate educational activities of the three departments. It also serves as a center for basic and clinical research in the area of chronic disease. Clinically, it functions as a facility for the care of children from all parts of northern California.

4. Fundamental laboratory and clinical investigations in the Division of Urological Surgery and the Department of Radiology have led to the creation of an outstanding diagnostic program on renal hypertension; moreover, the re-

sponsible individuals have played a major role in the development of a national cooperative study on renal hypertension. A team composed of representatives from Neurology, Neurosurgery, and Radiology has developed more refined approaches for the early detection and clinical management of cerebrovascular disorders.

5. An outstanding clinical program in Rehabilitation Medicine has been developed; it includes a state-supported Rural Rehabilitation Project which is among the most advanced experimental approaches to rehabilitation in the country. A therapeutic community to be closely related to the Medical Center is in the planning stage. Other advanced clinical units are the Therapeutic Unit of the Department of Psychiatry, and the Respiratory Unit developed by the Department of Anesthesia, in collaboration with Medicine, Surgery, and Radiology.

### *Research*

Though hampered by a serious lack of laboratory space, which will not be remedied until the Clinical Sciences Research Building is completed, the clinical departments have been active in both fundamental and clinical investigation and have actively fostered closer scientific ties between pre-clinical and clinical research. The Division of Radiotherapy of the Department of Radiology was the first in the country to be awarded a National Cancer Institute clinical center grant for the establishment of a fifteen-bed research unit in experimental radiotherapy and clinical oncology.

In May of 1962, a grant to establish the first clinical research center for premature infants was awarded to the Department of Pediatrics by the National Institutes of Health. Premature infants may be admitted to this center from any

hospital in northern California. The participating departments are Pediatrics, Obstetrics, Neurology, Medicine, Anesthesiology, and Psychiatry.

Subsequently, a third grant for the establishment of a sixteen-bed multidisciplinary clinical research unit was awarded to Stanford. The Department of Dermatology has developed a nationally recognized program of research on psoriasis, supported by a long-term grant from the Hartford Foundation.

As a result of the efforts of Dean Alway and the Departments of Genetics and Pediatrics, a broad-based program for the study of basic aspects of mental retardation was established by the Kennedy Foundation in 1962. The Kennedy Foundation grant created laboratories for the study of molecular medicine, with particular reference to the problem of mental retardation; it also aided in the establishment of a Division of Pediatric Neurology. Professor Joshua Lederberg of the Department of Genetics serves as the director of these laboratories, aided by a committee composed of representatives from Pediatrics, Biochemistry, Medicine, and Neurology. A comprehensive program for the study and care of children with mental retardation is evolving.

At the fundamental level, members of the clinical departments have made significant contributions in many fields, including behavioral physiology, tissue immunity, radiobiology, carcinogenesis, autoimmune disease, neurophysiology, and endocrinology. An interdisciplinary group with representation from the Departments of Genetics, Medicine, Radiology, and Surgery has pursued laboratory investigations on the mechanism of homograft rejection, on the suppression of the immune response, and on the characterization of histocompatibility antigens, aiming at a concerted attack on the problem of organ transplantation.

### *True Full-time Faculty Status*

In contrast with previous patterns in the medical school, the faculty is now entirely full-time. After intensive discussion, a Medical Service Plan was developed by the faculty of the clinical departments, in consultation with the dean. This plan has now been in operation for two years. Fees for services rendered to private patients (all of whom are also teaching patients) are pooled on a departmental and then on a schoolwide basis. These funds are used to augment faculty salaries to levels which are more nearly competitive with those of other major institutions and for other worthy purposes within the School of Medicine. Income of individual clinical faculty members is no longer directly dependent on volume of private practice; instead, it reflects their total contribution to teaching, research, and administration, as well as in patient care.

### *Social Medicine*

Medical education is necessarily concerned with the application of scientific medicine to public health. It cannot neglect the interplay of medical care and social progress. New knowledge of health and disease and increasingly sophisticated and effective methods of therapy are rapidly effecting major changes in the character of medical practice.

Students are introduced to the social context of medicine during their preclinical years in the course "Introduction to Clinical Medicine," to which several clinical and University departments contribute with the aid of a grant from the Russell Sage Foundation. At the clinical level, students are brought into close working contact with members of the Division of Clinical Social Work, from whom they learn of

the existence and potential usefulness to their patients of a wide range of community resources. Two clinical projects developed by the Department of Pediatrics also play an important role in the educational program in social medicine. The Stanford Student Family Program provides an unusual opportunity to learn family pediatric practice. The Bay Road project for low-income families, undertaken in collaboration with the Department of Health and Welfare of the County of San Mateo, provides the nucleus of a research and demonstration program in family and community medicine. An eighteen-week assignment in the outpatient department provides all Year V students with a substantial experience in socially oriented patient care. The Division of Rehabilitation Medicine has elucidated the social and community problems of the disabling consequences of disease and has discussed with students the therapeutic approaches to these problems from the clinical and social points of view. Finally, the grouping of the School of Physical Therapy, the Division of Clinical Social Work, and the Division of Speech Pathology and Audiology into a single Department of Allied Medical Sciences is an interesting departure which has facilitated the integration of these health disciplines into the clinical and educational programs of the School of Medicine.

### *3. Horizons*

The most immediate needs of the School of Medicine at this time are the resolution of administrative complexities inherent in the pattern of organization of the hospital and outpatient department, and the strengthening and integration into the new physical plant of those departments for which new space could not be provided initially. Above and beyond these obvious goals, however, the faculty is well aware that major tasks lie ahead. Stanford has a continuing responsibility to provide leadership in finding imaginative solutions to the unsolved problems of the clinical curriculum, of postgraduate medical education, and of the integration of a great medical center with the community in which it functions. Above all, we must continually seek ever better ways to mold students to an optimal blend of compassion and humanity, traditionally characteristic of the good physician, and to the analytical habits of thought of the scientist, which the thrust of the medical sciences has made an essential attribute of modern medicine.

As we look back upon the past decade, we see the great advances which the school has made. As we look forward toward the next decade, we appreciate the firm foundation upon which we stand. For the leadership which has guided us to this level of achievement, we are deeply grateful to Robert Alway, Dean; and we welcome Robert Alway, Professor of Pediatrics, back to the ranks of the teaching faculty.



*Clinical Sciences Research Building, July 5, 1964*

## 4. Appendix

TABLE I  
*Roster of Active Faculty*

### ANATOMY

D. Gray, Ph.D., <i>Professor</i>	1945
H. Kirkman, Ph.D., <i>Professor</i>	1945
R. Turner, Ph.D., <i>Professor</i>	1945
R. L. Hunter, Ph.D., <i>Associate Professor</i>	1963*
D. Stilwell, Jr., M.D., <i>Associate Professor</i>	1949
T. F. Algard, Ph.D., <i>Assistant Professor</i>	1952
A. K. Christensen, Ph.D., <i>Assistant Professor</i>	1961*

### ANESTHESIA

J. P. Bunker, M.D., <i>Professor</i>	1960*
J. W. Bellville, M.D., <i>Associate Professor</i>	1960*
E. N. Cohen, M.D., <i>Associate Professor</i>	1961*
V. Thomas, M.D., <i>Associate Professor</i>	1961*
G. Fletcher, M.D., <i>Assistant Professor</i>	1963*
C. Whitcher, M.D., <i>Assistant Professor</i>	1961*

### BIOCHEMISTRY

R. L. Baldwin, Ph.D., <i>Professor</i>	1959*
P. Berg, Ph.D., <i>Professor</i>	1959*
A. Kornberg, M.D., <i>Professor</i>	1959*
D. S. Hogness, Ph.D., <i>Associate Professor</i>	1959*
A. D. Kaiser, Ph.D., <i>Associate Professor</i>	1959*
I. R. Lehman, Ph.D., <i>Associate Professor</i>	1959*
G. R. Stark, Ph.D., <i>Assistant Professor</i>	1963*
L. Stryer, M.D., <i>Assistant Professor</i>	1963*

*Date shown indicates initial year of appointment.*

*\* Appointed during Dr. Alway's administration.*

# DERMATOLOGY

E. M. Farber, M.D., <i>Professor</i>	1948
E. Ascheim, Ph.D., <i>Assistant Professor</i>	1962*
M. A. Karasek, Ph.D., <i>Assistant Professor</i>	1962*

# FLEISCHMANN LABORATORIES

F. Fuhrman, Ph.D., <i>Professor</i>	1943
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# GENETICS

J. Lederberg, Ph.D., <i>Professor</i>	1959*
L. A. Herzenberg, Ph.D., <i>Associate Professor</i>	1959*
E. Shooter, Ph.D., <i>Associate Professor</i>	1963*
W. F. Bodmer, Ph.D., <i>Assistant Professor</i>	1961*

# MEDICAL MICROBIOLOGY

C. E. Clifton, Ph.D., <i>Professor</i>	1945
S. Raffel, M.D., <i>Professor</i>	1937
C. Schwerdt, Ph.D., <i>Professor</i>	1956
R. Roantree, M.D., <i>Associate Professor</i>	1956
L. Rosenberg, Ph.D., <i>Assistant Professor</i>	1961*

# MEDICINE

C. W. Barnett, M.D., <i>Professor</i>	1929
H. R. Holman, M.D., <i>Professor</i>	1960*
J. P. Kriss, M.D., <i>Professor</i>	1948
J. A. Luetscher, M.D., <i>Professor</i>	1948
F. Morrell, M.D., <i>Professor</i>	1961*
D. A. Rytand, M.D., <i>Professor</i>	1936
K. L. Chow, Ph.D., <i>Associate Professor</i>	1961*
W. P. Creger, M.D., <i>Associate Professor</i>	1949
F. L. Eldridge, M.D., <i>Associate Professor</i>	1954
D. L. Feldman, M.D., <i>Associate Professor</i>	1960*
R. G. Gould, Ph.D., <i>Associate Professor</i>	1960*
W. W. Hofmann, M.D., <i>Associate Professor</i>	1956
H. N. Hultgren, M.D., <i>Associate Professor</i>	1948
A. M. Iannone, M.D., <i>Associate Professor</i>	1960*

S. L. Schrier, M.D., <i>Associate Professor</i>	1959*
K. B. Taylor, M.D., <i>Associate Professor</i>	1962*
R. W. Angel, M.D., <i>Assistant Professor</i>	1961*
A. B. Barbour, M.D., <i>Assistant Professor</i>	1963*
H. Buschke, M.D., <i>Assistant Professor</i>	1962*
D. P. Cooney, M.D., <i>Assistant Professor</i>	1960*
J. W. Farquhar, M.D., <i>Assistant Professor</i>	1962*
F. A. Fox, M.D., <i>Assistant Professor</i>	1963*
G. S. Frank, M.D., <i>Assistant Professor</i>	1960*
K. D. Gardner, Jr., M.D., <i>Assistant Professor</i>	1963*
E. W. Hancock, M.D., <i>Assistant Professor</i>	1960*
E. Hershgold, M.D., <i>Assistant Professor</i>	1963*
R. M. Kivel, M.D., <i>Assistant Professor</i>	1958*
L. W. Knott, M.D., <i>Assistant Professor</i>	1964*
R. H. Maffly, M.D., <i>Assistant Professor</i>	1961*
T. C. Merigan, M.D., <i>Assistant Professor</i>	1963*
J. C. Montero, M.D., <i>Assistant Professor</i>	1962*
D. A. Prince, M.D., <i>Assistant Professor</i>	1963*
G. M. Reaven, M.D., <i>Assistant Professor</i>	1959*
S. A. Rosenberg, M.D., <i>Assistant Professor</i>	1961*
P. T. Rowley, M.D., <i>Assistant Professor</i>	1963*
H. J. Simon, M.D., <i>Assistant Professor</i>	1959*
A. Starr, M.D., <i>Assistant Professor</i>	1964*
K. L. Vosti, M.D., <i>Assistant Professor</i>	1959*
K. Wasserman, M.D., <i>Assistant Professor</i>	1961*

#### OBSTETRICS AND GYNECOLOGY

C. E. McLennan, M.D., <i>Professor</i>	1947
E. C. Sandberg, M.D., <i>Associate Professor</i>	1955
R. C. Goodlin, M.D., <i>Assistant Professor</i>	1961*
E. J. Lamb, M.D., <i>Assistant Professor</i>	1963*
A. H. Gates, Ph.D., <i>Assistant Professor</i>	1964*

#### PATHOLOGY

A. J. Cox, M.D., <i>Professor</i>	1933
D. Glick, Ph.D., <i>Professor</i>	1961*

L. J. Rather, M.D., <i>Professor</i>	1946
L. J. Rubenstein, M.D., <i>Professor</i>	1964*
S. L. Eversole, M.D., <i>Associate Professor</i>	1959*
B. Gerstl, M.D., <i>Associate Professor</i>	1961*
R. C. Rosan, M.D., <i>Assistant Professor</i>	1963*
A. M. Saunders, M.D., <i>Assistant Professor</i>	1962*

#### PEDIATRICS

R. H. Alway, M.D., <i>Professor</i>	1949
N. Kretchmer, M.D., <i>Professor</i>	1959*
W. V. B. Robertson, Ph.D., <i>Professor</i>	1961*
L. Luzzatti, M.D., <i>Associate Professor</i>	1951
H. C. Schwartz, M.D., <i>Associate Professor</i>	1960*
K. Tsuboi, Ph.D., <i>Associate Professor</i>	1960*
P. H. Altrocchi, M.D., <i>Assistant Professor</i>	1963*
H. Cann, M.D., <i>Assistant Professor</i>	1964*
P. Dallman, M.D., <i>Assistant Professor</i>	1961*
R. E. Greenberg, M.D., <i>Assistant Professor</i>	1960*
M. Klaus, M.D., <i>Assistant Professor</i>	1964*
G. McKhann, M.D., <i>Assistant Professor</i>	1963*
M. Osborne, M.D., <i>Assistant Professor</i>	1961*
I. A. Schafer, M.D., <i>Assistant Professor</i>	1961*
N. J. Sissman, M.D., <i>Assistant Professor</i>	1958*

#### PHARMACOLOGY

R. H. Dreisbach, M.D., <i>Professor</i>	1943
A. Goldstein, M.D., <i>Professor</i>	1955
L. Aronow, Ph.D., <i>Associate Professor</i>	1956
K. Killam, Ph.D., <i>Associate Professor</i>	1959*
S. M. Kalman, M.D., <i>Associate Professor</i>	1954
T. E. Mansour, Ph.D., <i>Associate Professor</i>	1961*
E. Zimmerman, Ph.D., <i>Assistant Professor</i>	1962*

#### PHYSIOLOGY

J. Crismon, M.D., <i>Professor</i>	1937
R. Grant, Ph.D., <i>Professor</i>	1947

G. Feigen, M.D., <i>Associate Professor</i>	1949
F. Yates, M.D., <i>Associate Professor</i>	1960*
J. M. Davidson, Ph.D., <i>Assistant Professor</i>	1963*
D. L. Lindsley, Ph.D., <i>Assistant Professor</i>	1963*
G. Terres, Ph.D., <i>Assistant Professor</i>	1960*

#### PREVENTIVE MEDICINE

R. R. Beard, M.D., <i>Professor</i>	1940
Q. M. Geiman, Ph.D., <i>Professor</i>	1955
L. Moses, Ph.D., <i>Professor</i>	1952
R. Miller, Ph.D., <i>Associate Professor</i>	1957*
C. B. Beal, M.D., <i>Assistant Professor</i>	1960*
O. A. Soave, D. V. M., <i>Assistant Professor</i>	1960*

#### PSYCHIATRY

D. Hamburg, M.D., <i>Professor</i>	1961*
K. H. Pribram, M.D., <i>Professor</i>	1959*
H. F. Shirley, M.D., <i>Professor</i>	1939
R. Clayton, Ph.D., <i>Associate Professor</i>	1963*
W. C. Dement, M.D., <i>Associate Professor</i>	1962*
T. A. Gonda, M.D., <i>Associate Professor</i>	1953
J. H. Handlon, Ph.D., <i>Associate Professor</i>	1961*
J. Hilgard, M.D., <i>Associate Professor</i>	1961*
P. H. Leiderman, M.D., <i>Associate Professor</i>	1963*
S. Levine, Ph.D., <i>Associate Professor</i>	1962*
J. F. Belz, M.D., <i>Assistant Professor</i>	1959*
D. Dorosin, M.D., <i>Assistant Professor</i>	1962*
G. R. Hexter, M.D., <i>Assistant Professor</i>	1963*
H. Kraemer, Ph.D., <i>Assistant Professor</i>	1964*
F. M. Matsumoto, M.D., <i>Assistant Professor</i>	1960*
R. Moos, Ph.D., <i>Assistant Professor</i>	1962*
C. P. Rosenbaum, M.D., <i>Assistant Professor</i>	1962*
G. F. Solomon, M.D., <i>Assistant Professor</i>	1962*
R. T. Suchinsky, M.D., <i>Assistant Professor</i>	1963*
I. D. Yalom, M.D., <i>Assistant Professor</i>	1962*

## RADIOLOGY

H. L. Abrams, M.D., <i>Professor</i>	1951
H. S. Kaplan, M.D., <i>Professor</i>	1948
L. A. Sapirstein, M.D., <i>Acting Professor</i>	1962*
M. A. Bagshaw, M.D., <i>Associate Professor</i>	1956
H. H. Jones, M.D., <i>Associate Professor</i>	1948
R. Kallman, Ph.D., <i>Associate Professor</i>	1956
N. Blank, M.D., <i>Assistant Professor</i>	1962*
W. Caldwell, M.D., <i>Assistant Professor</i>	1964*
R. Loevinger, Ph.D., <i>Assistant Professor</i>	1959*
K. C. Smith, Ph.D., <i>Assistant Professor</i>	1956
R. A. Weintraub, M.D., <i>Assistant Professor</i>	1964*
M. Weissbluth, Ph.D., <i>Assistant Professor</i>	1953
L. M. Zatz, M.D., <i>Assistant Professor</i>	1958*

## SURGERY

J. G. Allen, M.D., <i>Professor</i>	1959*
R. A. Chase, M.D., <i>Professor</i>	1963*
R. B. Cohn, M.D., <i>Professor</i>	1937
J. W. Hanbery, M.D., <i>Professor</i>	1954
C. H. Hatcher, M.D., <i>Professor</i>	1960*
H. A. Oberhelman, Jr., M.D., <i>Professor</i>	1960*
T. A. Stamey, M.D., <i>Professor</i>	1961*
W. F. Baxter, M.D., <i>Acting Associate Professor</i>	1960*
D. E. Govan, M.D., <i>Associate Professor</i>	1961*
F. Winter, M.D., <i>Acting Associate Professor</i>	1960*
N. E. Shumway, M.D., <i>Associate Professor</i>	1958*
J. E. Connolly, M.D., <i>Associate Professor</i>	1957*
J. L. Farr, M.D., <i>Assistant Professor</i>	1962*
E. Hurley, M.D., <i>Assistant Professor</i>	1964*
R. Lower, M.D., <i>Assistant Professor</i>	1964*
T. S. Nelsen, M.D., <i>Assistant Professor</i>	1960*
F. H. Riordan, III, M.D., <i>Assistant Professor</i>	1961*
F. B. Simmons, M.D., <i>Assistant Professor</i>	1962*

## ALLIED MEDICAL SCIENCES

### *Clinical Social Work*

D. E. O'Keefe, Ph.D., <i>Associate Professor</i>	1961*
L. M. McGann, <i>Assistant Professor</i>	1955
G. C. St. Denis, <i>Assistant Professor</i>	1961*

### *School of Nursing*

G. Ringressy, <i>Professor</i>	1933
E. Conroy, <i>Associate Professor</i>	1952
A. Denhard, <i>Assistant Professor</i>	1946
L. J. Hawes, <i>Assistant Professor</i>	1953
B. Lawrence, <i>Assistant Professor</i>	1936
F. M. McDonald, <i>Assistant Professor</i>	1948
M. L. R. Pol, <i>Assistant Professor</i>	1945

### *Division of Physical Therapy*

L. Daniels, <i>Associate Professor</i>	1955
E. Forward, <i>Acting Assistant Professor</i>	1963*
C. Graham, <i>Acting Assistant Professor</i>	1952
S. Semans, <i>Assistant Professor</i>	1955

### *Speech Pathology and Audiology*

V. A. Anderson, Ph.D., <i>Professor</i>	1957*
J. Eisenson, Ph.D., <i>Professor</i>	1962*
H. Newby, Ph.D., <i>Professor</i>	1947
E. D. Schubert, Ph.D., <i>Professor</i>	1962*
R. F. Dixon, Ph.D., <i>Associate Professor</i>	1958*
D. Huntington, Ph.D., <i>Associate Professor</i>	1957*
C. N. Bush, Ph.D., <i>Assistant Professor</i>	1959*
J. F. Font, Ph.D., <i>Assistant Professor</i>	1963*

TABLE 2

*Growth of Faculty, Staff, and Student Body*  
*Stanford University School of Medicine, 1957-1964*

	1957-58	1958-59	1959-60
<b>I. FACULTY AND STAFF</b>			
<i>Paid Faculty</i> (including Acting and Visiting)	115	116	148
<i>Staff</i>	<u>140</u>	<u>145</u>	<u>295</u>
<i>Total Salaried Personnel</i>	<u>225</u>	<u>261</u>	<u>443</u>
<i>Clinical Appointments</i> (Voluntary Faculty and Associates)	636	693	756
<b>II. STUDENTS TRAINED BY MEDICAL FACULTY*</b>			
	622	665	644

\* Includes M.D. candidates, house staff, postdoctoral fellows, nursing students, and other nonmedical registered students.

1960-61	1961-62	1962-63	1963-64	1963-64 over 1957-58	
				Increase	Ratio
169	195	238	253	138	2.20
<u>391</u>	<u>538</u>	<u>504</u>	<u>603</u>	<u>463</u>	<u>4.31</u>
<u>560</u>	<u>733</u>	<u>742</u>	<u>856</u>	<u>601</u>	<u>3.36</u>
720	741	774	793	157	1.25
663	718	744	873	251	1.40

TABLE 3  
*Growth of Budget, Stanford University School of Medicine, 1957-1964*

1957-1964	1957-58	1958-59	1959-60
<b>I. EXPENDITURES</b>			
<i>Instruction</i> <sup>1</sup>	1,422,098	1,677,639	2,334,786 <sup>2</sup>
<i>Research</i> (separately budgeted)	1,444,156	1,826,467	2,218,272
<i>Patient Care</i>	484,251	379,328	542,390
<i>Lane Library</i>	75,667	80,321	97,541
<i>Other Expenses</i> (maintenance of plant, development, etc.)	73,831	141,715	351,990
<i>Total Expenditures</i>	<u>3,500,003</u>	<u>4,105,470</u>	<u>5,544,979</u>
<b>II. SOURCE OF FUNDS</b>			
<i>Government Grants</i> (not including stipends)	1,097,172	1,518,511	2,152,246
<i>Gifts and Grants for Special Projects</i>	{ 874,546	750,284	817,431
<i>Endowment for Special Projects</i>		197,481	107,770
<i>Gifts and Grants for Medical School, General</i>	30,521	206,491	68,749
<i>Endowment for Medical School, General</i>	217,096	20,314	957,545
<i>Special Funds</i> (PSI and Lab Fees)	—	—	117,341
<i>University General Funds</i>	1,280,668	1,412,389	1,323,897
<i>Total Funds</i>	<u>3,500,003</u>	<u>4,105,470</u>	<u>5,544,979</u>
<i>University General Funds as percentage of total funds</i>	36.6%		
<b>III. FELLOWSHIPS AND SCHOLARSHIPS</b>			
<i>Government Training Grants</i>	52,082	69,957	163,474
<i>Non-Government Grants</i>	{ 67,429	{ 73,500	{ 62,139
<i>Gift Funds</i>			
<i>Endowment Income</i>	41,899	34,716	40,864
<i>Total Fellowships and Scholarships</i>	<u>161,410</u>	<u>178,173</u>	<u>266,477</u>
<b>IV. PLANT ADDITIONS</b>			
<i>Total Plant Additions, 1957-63</i>	4,601,543	8,182,750	3,445,858
	17,553,466		

<sup>1</sup> Includes administration; also research not separately budgeted.

<sup>2</sup> Departments of Biochemistry and Genetics added.

<sup>3</sup> Departments of Anesthesia and Dermatology added.

1960-61	1961-62	1962-63	1963-64	1963-64 over 1957-58	
				Increase	Ratio
2,779,957 <sup>3</sup>	3,210,078	3,448,564	4,223,343	2,801,245	2.97
2,660,952	3,684,574	4,932,815	5,465,000	4,020,844	3.78
490,699	600,138	832,816	797,319	313,068	1.65
105,676	101,393	116,639	121,104	45,437	1.60
655,692	510,107	615,994	696,075	622,244	9.43
<u>6,692,976</u>	<u>8,106,290</u>	<u>9,946,828</u>	<u>11,302,841</u>	<u>7,802,838</u>	<u>3.23</u>
2,498,050	3,779,125	4,938,848	5,650,000	4,552,828	5.15
897,877	611,257	814,656	908,947	{ 125,408	{ 1.14
109,271	95,890	105,815	91,007	926,462	31.35
407,249	518,854	574,965	956,983	518,304	3.39
816,523	701,560	687,293	735,400	1,158,039	1.41
406,595	699,320	986,000	1,158,039	521,797	3.23
1,557,411	1,700,284	1,794,251	1,802,465	7,802,838	3.23
<u>6,692,976</u>	<u>8,106,290</u>	<u>9,946,828</u>	<u>11,302,841</u>		
23.3%			15.9%		
358,277	492,133	650,666	695,000	642,918	13.34
9,057	7,583	8,494	10,000	{ 42,571	1.63
59,763	61,194	98,784	100,000	48,101	2.15
50,433	71,295	82,181	90,000	733,590	5.54
<u>477,530</u>	<u>632,185</u>	<u>840,125</u>	<u>895,000</u>		
310,676	476,037	536,602			

TABLE 4  
*Outpatient Teaching Census, Stanford Clinics*

Year	Total Patient Visits	New Patients
1959-60	19,000	5,000
1960-61	45,000	8,000
1961-62	60,000	10,000
1962-63	68,000	11,000
1963-64	80,000	12,000

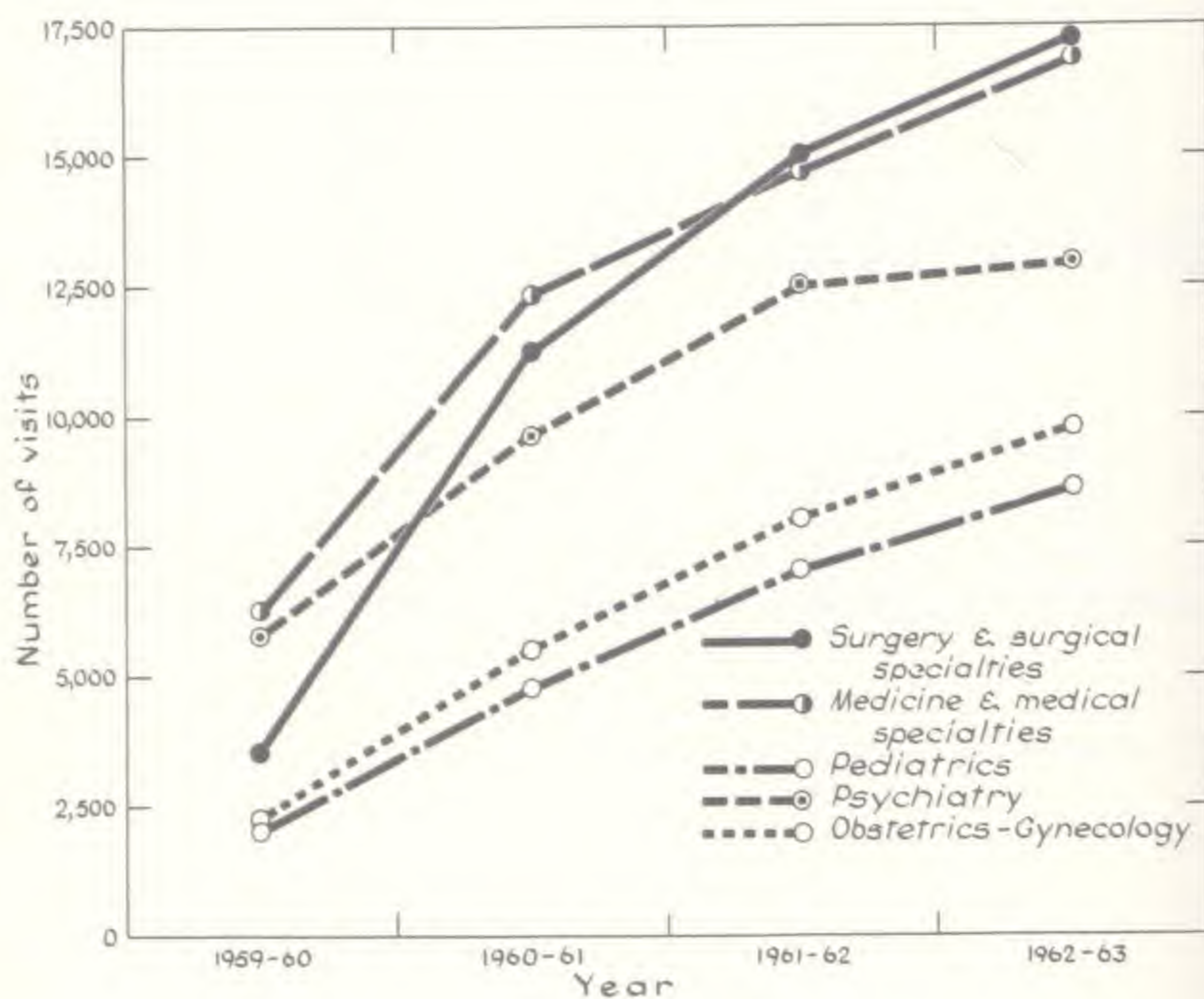


FIGURE 1. *Patient Visits, Stanford Clinics, July 1959-July 1963.*

TABLE 5  
*Inpatient Teaching Census Based on Bed Utilization,  
 Palo Alto-Stanford Hospital*

<i>Year<sup>a</sup></i>	<i>Total Patient Days</i>	<i>Stanford Admissions % of Total Days</i>
1960-61	126,000	19
1961-62	135,000	25
1962-63	136,000	30
1963-64	146,000	36
1964-65 (projected)	147,000	45

<sup>a</sup> July through June.